

Donelda Ellis

## Supporting the Breast-feeding Dyad

### SUMMARY

Although there has been a resurgence of breast-feeding in the last decade, 50% of women discontinue exclusive breast-feeding by the third month postpartum. Practices known to interfere with breast-feeding are often begun in hospital and continued at home. The physiology of lactation, the need for interaction between mother and infant during breast-feeding, and research findings indicate that scheduled feeds, feeds of limited duration, supplementation, and separation of mothers and infants interfere with the success of breast-feeding. Health care providers can promote breast-feeding duration by advising unlimited feeds, promoting 'rooming-in' at hospitals, and providing support and information. (Can Fam Physician 1986; 32:541-545.)

### SOMMAIRE

Malgré le regain de popularité de l'allaitement maternel au cours de la dernière décennie, 50% des femmes cessent l'exclusivité de l'alimentation au sein au cours du troisième mois postpartum. Certaines pratiques connues pour influencer négativement l'alimentation au sein sont souvent introduites à l'hôpital et poursuivies à la maison. La physiologie de la lactation, le besoin d'interaction entre la mère et l'enfant au cours de l'alimentation au sein et les constatations de la recherche indiquent que les repas cédulés, la limite imposée à la durée des repas, les suppléments alimentaires et le fait de séparer la mère de son enfant contribuent à l'insuccès de l'allaitement maternel. Les dispensateurs de soins peuvent favoriser l'allaitement maternel en enlevant les limites aux repas, en favorisant la cohabitation à l'hôpital et en fournissant support et informations.

**Key words:** Breast-feeding, infant, nutrition

Ms. Ellis is an assistant professor of nursing at the University of British Columbia. Reprint requests to: 2211 Wesbrook Mall, Vancouver, BC. V6T 2B5.

**B**REAST-FEEDING HAS increased in both incidence and duration in Canada, particularly in the last decade.<sup>1</sup> However, although the Canadian Paediatric Society has recommended breast-feeding as practically the only source of nutrients for the first four to six months,<sup>2</sup> breast-feeding declines rapidly after mothers leave hospital.<sup>1, 3, 4</sup>

Because current postnatal hospital stays are brief, it is important for women and their infants to receive

optimal assistance with breast-feeding in hospital and for several weeks or even months at home. Physicians' orders and the advice of all health care providers can have considerable impact on breast-feeding success. The techniques of breast-feeding are discussed elsewhere.<sup>5-7</sup>

### Physiology

In early pregnancy, mammatogenesis results in a number of changes in the breasts. The breasts become larger, the skin appears thinner and the veins become more visible due to the influence of placental lactogen, prolactin, and chorionic gonadotropin. There is a marked proliferation and differen-

tiation of the ductal system due to estrogen, and an increase in the lobuloalveolar system due to progesterone.<sup>8</sup> From the third month of pregnancy, the production of colostrum is stimulated by prolactin from the adenohypophysis.

At the time of birth, the withdrawal of luteal and placental estrogens plus the infant's suckling result in depression of prolactin inhibiting factor (PIF) and stimulation of prolactin enhancing factors in the hypothalamus. The PIF is controlled by catecholamine levels in the hypothalamus. Agents that increase prolactin by decreasing catecholamines and thus the PIF level include the phenothiazides and reserpine. L-dopa and ergot

preparations are suppressors of prolactin.<sup>8</sup>

Prolactin stimulates and supports lactation. Levels of this hormone rise during sleep and also as a result of psychogenic influence and stress.<sup>9</sup> In both the lactating and non-lactating woman, prolactin is produced in increased amounts with anesthesia, surgery, exercise, nipple stimulation, and sexual intercourse. Suckling provides the continuous stimulation of the prolactin reflex and also stimulates the release of neurohypophyseal oxytocin.<sup>8</sup> The latter causes contraction of the myoepithelial cells surrounding the mammary alveoli, resulting in milk ejection or the 'let-down' reflex.<sup>8</sup>

The maintenance of established lactation requires suckling to stimulate production and to remove milk. When milk is not removed, distention of the alveoli leads to reduced capillary flow and compression atrophy of the secretory cells. The oxytocin (let-down) reflex can be triggered by the mother's thoughts of her baby or by the baby's cry. Let-down is inhibited in a mother who is insecure, anxious, tired, or in pain.<sup>8</sup>

The lactating glands readily adjust the milk supply to demand. "When the suckling infant signals his needs, the breasts will respond".<sup>8</sup>

The infant's suckling, then, is essential to lactogenesis and galactopoiesis. It logically follows that factors that delay, weaken, abbreviate, or confuse suckling behavior will interfere with milk production. These factors include a drugged mother or infant, delayed initiation, scheduled intervals, and timed feeding episodes,<sup>10-13</sup> and use of supplementary or complementary bottle-feeding of water, glucose or formula.<sup>14, 15</sup>

In comparison to other mammals, the milk of humans has a low solute and protein concentration. This characteristic, plus the extended period of complete dependency, places human infants among the 'continuous-contact species' for about the first nine months after birth.<sup>16</sup> Continuous-contact is characterized by the infant's being carried about with the mother by day, sleeping with or near her at night and suckling nutritively and/or non-nutritively frequently and for short periods. Within any given feeding episode in which let-down occurs, the infant receives, initially, milk of low fat and protein content

(foremilk) and latterly, milk of high calorie and fat content—about one-third and two-thirds of the volume respectively.<sup>17</sup> The constituents of human milk remain fairly constant for women of varying degrees of nutrition. However, the quantity of milk declines with maternal undernutrition.<sup>8</sup> For full-term infants of well-nourished mothers, breast milk alone provides adequate nourishment for the first six months.<sup>18</sup>

Several full-term infant reflexes are important to the success of breast-feeding. A wide open mouth and turning of the head towards a stimulus (rooting reflex) is elicited by the mother touching the infant's lips or the cheek near the corner of the mouth with her finger or breast. The sucking reflex is elicited by something, usually the nipple, touching the palate deep in the infant's mouth.<sup>19</sup>

To facilitate these reflexes, the infant should be held on his or her side, facing the mother's breast with the lips touching her nipple. The infant then can take all of the nipple and most of the areola into the mouth.<sup>20</sup> Not having to turn the head will also facilitate swallowing. It is likely that bottle-feeding has a detrimental effect on the infant's suckling at the breast. Little jaw action is required. Suction draws the milk from the nipple and the tongue is used to stem the flow and to attempt to press the unyielding rubber nipple against the palate.<sup>20</sup> In breast-feeding, oral suction draws the mother's nipple far into the mouth, and jaw action compresses the ampullae under the areola. Because it is difficult for the infant to achieve an airtight seal between a rubber nipple and the lips, more air is ingested during bottle-feeding than would be during breast-feeding.

## Benefits of Breast-feeding

The multiple benefits of breast-feeding over bottle-feeding are well documented,<sup>2, 16</sup> and so only a brief summary is presented here. Biochemically, breast milk is uniquely suited to the nutritional needs of the human infant. Not only does it provide the essential nutrients, with the possible exceptions of vitamin D and fluoride, but these nutrients are readily assimilated. The protein and iron in human milk, compared with cow's milk, are particularly well suited to the infant's digestive capabilities.<sup>2</sup>

Breast milk also provides protection against gastrointestinal illnesses and respiratory infections through the maintenance of *lactobacillus bifidus* in the intestine and the provision of immunoglobulins.<sup>2</sup> It appears that allergies in later childhood occur less frequently in breast-fed than in bottle-fed infants.<sup>2</sup> For the mother, too, there are advantages to breast-feeding. Uterine involution is hastened through the suckling-induced higher oxytocin levels. Breast-feeding is convenient in that the milk is portable, readily available, and requires no preparation. The close contact of breast-feeding may promote mother-infant bonding.<sup>2</sup>

Because of these multiple benefits, breast-feeding has been recommended as the preferred method of infant feeding for the first four to six months.<sup>2</sup> To facilitate this, care of breast-feeding mothers and infants should be guided by the physiological, physical, and biochemical factors involved in lactation, suckling, and nutrition.

## Pre-conception

The decision to breast-feed is often made before a woman becomes pregnant.<sup>21, 22</sup> However, due to a lack of visible role models, many women arrive at their own childbearing experience without ever having seen an infant being breast-fed.<sup>23-25</sup> Included in the deterrents to breast-feeding are a lack of knowledge of the benefits, lack of understanding of the physiology of lactation and anticipated embarrassment about breast-feeding in social situations.<sup>26</sup> Therefore, women need to have their motivation and information about breast-feeding bolstered long before they give birth.

Health care providers could help raise consciousness about and acceptance of breast-feeding through advising or participating in relevant health or family life curricula and classes in the schools. In addition, the encouragement of mothers to continue breast-feeding would increase the number of role models.

## The Antenatal Period

If women haven't made a decision about method of infant feeding before conception, they generally do during pregnancy.<sup>21</sup> Health care providers should provide information to assist pregnant women to make that deci-

sion. Attitudes also need to be discussed so that ambivalence about the nurturant/esthetic and sexual aspects of breast-feeding can be explored. For some women, the compatibility of working outside the home and breast-feeding should also be discussed.<sup>27</sup> In addition, the woman's breasts should be examined for factors such as reduction mammoplasty and flat or inverted nipples that might interfere with breast-feeding success. For the latter two, Hoffman's exercises and/or Woolwich shells can be prescribed to increase nipple protractility.<sup>20</sup> The effectiveness of other methods of breast preparation such as nipple rolling and lubrication has been studied, but the results are inconclusive.<sup>28-30</sup> However, there could be psychological value in the woman knowing and handling her breasts.<sup>20</sup>

Prenatal preparation of the breasts may contribute to breast-feeding success, but several studies indicate that early, frequent and unlimited suckling are related to the duration of breast-feeding.<sup>12, 31-33</sup>

## The Intrapartum Period

The positive influence of early mother-infant skin-to-skin contact on breast-feeding duration and the strengthening of the mother-infant bond has been demonstrated in a number of studies.<sup>31, 34-36</sup> A prospective longitudinal study of 249 breast-feeding mothers indicated that early initiation of breast-feeding and rooming-in were positively related to continuance of breast-feeding.<sup>31</sup> Salariya et al.<sup>32</sup> found that a combination of early initiation and two-hourly feeds resulted in considerably longer duration of breast-feeding (14-392 days) than did late initiation and four-hourly feeds (11-280 days). Similarly, Martin and Monk<sup>34</sup> found that delays of more than four hours in starting breast-feeding were associated with mothers' stopping breast-feeding within two weeks. In addition, breast-feeding at set times rather than on demand was associated with early cessation.

Soon after birthing, particularly if the mother is not drugged,<sup>2</sup> both mother and infant will be interested in initiating breast-feeding. This should be encouraged by the physician and nurse, and assistance given when the mother's and infant's conditions are stable. Cesarean section and/or an intravenous infusion make early breast-

feeding more difficult, but it is still possible. Formerly, it was common practice to give the newborn a trial feed of water. This is no longer advocated since colostrum is a nonirritating physiological fluid.<sup>8</sup>

## The Early Post Partum Period

### *Frequency and duration*

During the post partum period, the infant's hunger should dictate feeding frequency and duration. A study on days three to nine of 100 infants fed on demand and 100 infants fed on a rigid schedule showed that significantly more of the demand-fed infants had regained their birth weight by the ninth day than had the rigidly scheduled infants.<sup>10</sup> De Carvalho et al.<sup>33</sup> found that infants who breast-fed more frequently postnatally for 15 days consumed more milk and gained more weight than did the control group of infants on a three-to-four-hourly schedule. It has been common procedure to advise mothers to limit suckling time to three to five minutes in the first few days post partum in order to prevent nipple soreness and trauma. However, there is no evidence to support this practice. In fact, the literature indicates that such limitation is not only ineffective, but merely delays the onset of soreness.<sup>12, 29, 37, 38</sup>

Other benefits to the mother of early, frequent, 'demand', and unlimited breast-feeding include early onset of lactation,<sup>32</sup> and minimal engorgement.<sup>32, 39</sup> Another benefit of early colostrum ingestion for the infant is the stimulation of meconium evacuation,<sup>8, 40</sup> and a concomitant reduction in reabsorption of bile pigment from the intestine.<sup>41</sup>

To facilitate the adaptation of milk production to infant needs, 'demand' feeding should be encouraged. With demand feeding, intervals and duration are determined by the infant. Rooming-in in hospital facilitates demand feeding and will give the mother the opportunity to observe the infant's usual sleep-wake patterns, fussing, and other noises, thus reducing the shock of reality on going home.

### *Non-supplementation*

The duration of breast-feeding has been associated with non-supplementation with formula or glucose in hospital.<sup>21</sup> Beske and Garvis<sup>14</sup> found that infants breast-fed for a short time (<89 days) had significantly more

supplementation in the first month than did infants breast-fed for more than 150 days. In West's<sup>42</sup> six-month prospective study of 216 mothers breast-feeding on discharge from hospital, 51% were fully breast-feeding at 12 weeks post partum. Thirty-nine (18%) had commenced supplement at six weeks. Of those, one returned to full breast-feeding, three continued partially for 12 weeks and 35 were fully bottle-feeding within an average of three weeks of starting supplements. Their reason for introducing supplements was perceived insufficient breast milk—the most frequently reported reason for supplementation or cessation of breast-feeding.<sup>32, 42-47</sup>

The hospital practice of providing formula samples to breast-feeding mothers "may shorten the duration of breast-feeding and hasten the age at which solids are introduced".<sup>48</sup> Bergevin et al.<sup>48</sup> also found that this trend was more likely in the more vulnerable women: less educated mothers, primiparas, and mothers who had been ill post partum. One factor that may contribute to giving up breast-feeding for formula is the nipple confusion previously described.<sup>49</sup>

Supplementation with glucose or water has been a prevalent intervention for physiological jaundice. However, its effectiveness has not been substantiated.<sup>50, 51</sup> Although some studies have found a relationship between use of formula supplements in hospital and early discontinuance of breast-feeding,<sup>21, 35</sup> Gray-Donald et al.<sup>52</sup> suggest that this practice is a marker rather than a cause of breast-feeding difficulty. However, in the interest of stimulating lactation and preventing nipple confusion, mothers should be encouraged to avoid supplements. If hospital practice contradicts this, the physician could write an order proscribing supplementation except when the mother requests it.

Breast-feeding duration is also related to social support the mother receives.<sup>14, 53</sup> Supportive people provide encouragement and affirmation and indicate to the woman that they are on her side and will help her to succeed at breast-feeding. Fathers are reported to be the greatest source of support for breast-feeding women.<sup>14, 54</sup> They also seem to influence the duration of breast-feeding. Bloom et al.<sup>31</sup> report that the duration of breast-feeding was significantly higher in women whose husbands preferred breast-feeding

compared to those who preferred bottle-feeding, or who had no preference. Similarly, Rousseau et al.<sup>22</sup> found that the husband was the person whose support most frequently correlated with breast-feeding duration. A host of factors precipitating transient lactation crises (threatened involuntary discontinuation) is described by Sjolín et al.<sup>55</sup> Most of these crises occurred in the first months, and by "general support and simple advice it was often possible to postpone weaning for a considerable time".

## Continued Post Partum Support

Because breast-feeding is based on the relationship between mother and child, attempts should be made to facilitate, support, and reinforce this natural dyadic process. Health care providers need to be aware of interventions and attitudes that can interfere with breast-feeding. These negative influences include supplementation, scheduled feeds, and expressions of doubt in a mother's ability to completely nourish her baby. From pre-conception to weaning, physicians and nurses can provide information and support directly to mothers and mothers-to-be or indirectly through their families and friends.

Because breast-feeding is not an instinct, but a learned behavior, a mother will likely experience periods of difficulty and doubt. Jelliffe et al.<sup>16</sup> refer to breast-feeding as a "confidence trick". Breast-feeding does not always go smoothly and so motivation, assurance, and commitment are important. A 'fussy' baby, doubts about milk supply, anxiety, or pain can precipitate the "anxiety-nursing-failure cycle" in well-nourished women with normal, full-term babies.<sup>16</sup> Health care providers and family members can interrupt this cycle by accenting positive aspects such as the baby's growth, longer sleep periods, and the mother's ability to increase her milk supply through more frequent nursing, if needed. The father can be encouraged to provide physical support by diapering, rocking, cuddling, and walking the baby, but not usurping the mother's biological role of feeding. Mothers with breast-feeding concerns can be referred to other mothers who have successfully breast-fed, to the community health nurse or to La Leche League, an

effective mothers' self-help organization. The physician and community health nurse can provide support to the mother in the form of education and encouragement.

## Education

- Encourage the mother to eat a varied diet, according to *Canada's Food Guide*,<sup>56</sup> incorporating an additional 500 calories, and to respond to her increased thirst.
- Inform the mother that temperament and suckling behavior vary widely among infants.<sup>8</sup>
- Indicate that infants often cry for reasons other than hunger. If the baby is fed but fussy, either parent can try carrying, rocking, vocalizing, changing the infant's position, or a ride in the car. If hunger or a need to suck is the problem, then the breast should be offered again, even if only a short interval has elapsed since the last feed. This will also stimulate further milk production.
- The superiority of human milk alone for the first six months needs to be emphasized, along with the fact that infants are not developmentally ready for semi-solids. Such readiness is indicated by eruption of teeth, salivation, eye-hand coordination, disappearance of the extrusion reflex, and ability to sit.<sup>57</sup>
- Later in the first year of life, breast-feeding infants, when they and their mothers are ready and interested, can be introduced gradually and directly to milk by cup.

## Encouragement

- Speak positively of the woman's mothering behavior, including her breast-feeding and the infant's progress.
- Support her in filtering out unhelpful advice from others.
- Affirm her own judgment and common sense.
- Use criteria in addition to weight gain to draw conclusions about the infant's progress by assessing feeding frequency and duration, suckling, swallowing, and evidence of satisfaction and hydration.

## Conclusion

Although the number of women in Canada commencing breast-feeding is increasing, the goal of health care providers today should be to encourage

those mothers to breast-feed for the recommended four to six months. Perceived inadequacy of milk supply continues to be a concern, as do sore nipples and pumping and saving milk.<sup>58</sup> Breast-feeding women need to be supported and provided with consistent information so that they can deal with these concerns. Resources for mothers exist in the form of La Leche League and numerous books and pamphlets on breast-feeding. For health care providers, Health and Welfare Canada's resource kits for health care professionals and for hospitals are valuable.<sup>59, 60</sup> Included in the booklet for hospitals is a bibliography and resource guide. Given these current and comprehensive resources, health care providers have the means to be of considerable assistance to the breast-feeding dyad for many months. ●

## References

1. McNally E, Hendricks S, Horowitz I. A look at breastfeeding trends in Canada (1963-1982). *Can J Public Health* 1985; 76:101-7.
2. American Academy of Pediatrics. Breast-feeding. *Pediatrics* 1978; 62:591-9.
3. Ellis DJ, Hewat RJ. Factors related to breastfeeding duration. *Can Fam Physician* 1984; 30:1479-84.
4. Fieldhouse P. A revival of breastfeeding. *Can J Public Health* 1984; 74:128-32.
5. Riordan J, Countryman BA. Preparation for breastfeeding and early optimal functioning. *J Obstet Gynecol Nurs* 1980; 9:277-83.
6. Riordan J, Countryman BA. Selfcare for continued breastfeeding and some breast-feeding problems and solutions. *J Obstet Gynecol Nurs* 1980; 9:357-66.
7. Schlegel AM. Observations on breast-feeding technique: facts and fallacies. *Matern Child Nurs J* 1983; 8:204-8.
8. Lawrence RA. Breast-feeding: a guide for the medical profession. St. Louis: CV Mosby Co., 1980.
9. McNeilly AS, Robinson ICA, Houston MJ, Howie PN. Release of oxytocin and prolactin in response to suckling. *Br Med J* 1983; 286:257-9.
10. Illingworth RS, Stone DGH. Self-demand feeding in a maternity unit. *Lancet* 1953; 1:683-7.
11. Olmstead RW, Jackson EB. Self-demand feeding in the first week of life. *Pediatrics* 1950; 6:396-401.
12. L'esperence C, Frantz K. Time limitation for early breastfeeding. *JOGN Nurs* 1985; 14:114-8.
13. Slaven S, Harvey D. Unlimited suckling time improves breast-feeding. *Lancet* 1981; 1:392-3.
14. Beske J, Garvis MS. Important factors in breast-feeding success. *Matern Child Nurs J* 1982; 7:174-9.
15. Loughlin HH, Clapp-Channing NE, Gehlbach SH, Pollard JC, McCutcheon

TM. Early termination of breast-feeding: identifying those at risk. *Pediatrics* 1985; 75:508-13.

16. Jelliffe DB, Jelliffe EFP. *Human milk in the modern world*. Toronto: Oxford University Press, 1978.

17. Applebaum RM. *The modern management of successful breast-feeding*. *Pediatr Clin North Am* 1970; 17:203-25.

18. Ahn CH, MacLean WC. Growth of the exclusively breast-fed infant. *Am J Clin Nutr* 1980; 33:183-92.

19. Helsing E, King FS. *Breast-feeding in practice: a manual for health workers*. Toronto: Oxford University Press, 1982:39.

20. Riordan J. *A practical guide to breast-feeding*. Toronto: C V Mosby Co., 1983.

21. Goodline LA, Fried PA. Infant feeding practices: pre- and postnatal factors affecting choice of method and the duration of breastfeeding. *Can J Public Health* 1984; 75:439-44.

22. Rousseau EH, Lescop JN, Fontaine S, Lambert J, Roy C. Influence of cultural and environmental factors on breastfeeding. *Can Med Assoc J* 1982; 127:701-4.

23. Newton N, Newton M. Psychologic aspects of lactation. *N Engl J Med* 1967; 277:1179-88.

24. Brack DC. Social forces, feminism and breast-feeding. *Nurs Outlook* 1975; 23:556-61.

25. Bamford I. Educating tomorrow's parents: health education in breastfeeding. *J Human Nutr* 1976; 30:276-80.

26. Ellis DJ. Secondary school students' attitudes and beliefs about breastfeeding. *J Sch Health* 1983; 53:600-4.

27. Cahill MA, Lowman K, eds. *Working and breast-feeding*. Franklin Park, IL.: La Leche League International, 1982.

28. Brown MS, Hurlock JT. Preparation of the breast for breastfeeding. *Nurs Res* 1975; 24:448-51.

29. Whitley N. Preparation for breastfeeding: a one-year follow up of 34 nursing mothers. *JOGN Nurs* 1978; 7:44-8.

30. Atkinson LD. Prenatal nipple conditioning for breastfeeding. *Nurs Res* 1979; 28:267-71.

31. Bloom K, Goldbloom RB, Robinson SC, Stevens FE. Factors affecting the continuance of breastfeeding. *Acta Paediatr Scand [Suppl]* 1982; 300:9-14.

32. Salariya EM, Easton PM, Cater JJ. Duration of breastfeeding after early initiation and frequent feeding. *Lancet* 1978; 2:1142-3.

33. de Carvalho M, Robertson S, Freidman A, Klaus M. Effect of frequent breast-feeding on milk production and infant weight gain. *Pediatrics* 1983; 72:307-11.

34. Martin J, Monk J. Trends in breast-feeding. *Matern Child Health* 1983; 12:72-8.

35. Le Chateau P, Holmburg H, Jakobson K, Winberg J. A study of factors promoting and inhibiting lactation. *Dev Med Child Neurol* 1977; 19:575-84.

36. Klaus MH, Kennell JH. *Parent-infant bonding*, 2nd ed. St. Louis: CV Mosby Co., 1982:48.

37. de Carvalho M, Robertson SA, Klaus M. Does duration and frequency of early breastfeeding affect nipple pain? *Birth* 1984; 11:81-4.

38. Newton N. Nipple pain and nipple

damage. *J Pediatr* 1952; 41:411.

39. Cerutti FR. The management of breast-feeding. *Birth Fam J* 1981; 8:252-6.

40. de Carvalho M, Klaus MH, Merkatz RB. Frequency of breastfeeding and serum bilirubin concentration. *Am J Dis Child* 1982; 136:737-8.

41. La Leche League International. *The womanly art of breastfeeding*. 3rd ed. Franklin Park, IL.: La Leche League International, 1985:225.

42. West CP. Factors influencing the duration of breast-feeding. *J Biosoc Sci* 1980; 12:325-31.

43. Bacon CJ, Wylie JM. Mothers' attitudes to infant feeding at Newcastle General Hospital in summer 1975. *Br Med J* 1976; 1:308-9.

44. Brimblecombe FSW, Cullen D. Influences on a mother's choice of infant feeding. *Public Health* 1977; 91:117-26.

45. Ellis DJ, Hewat RJ. Breast-feeding: motivation and outcome. *J Biosoc Sci* 1984; 16:81-8.

46. Houston MJ, Howie PN. Home support for the breastfeeding mother. *Midwife, Health Visitor and Community Nurse* 1981; 17:378-82.

47. Sloper K, McKean L, Baum JD. Factors influencing breast-feeding. *Arch Dis Child* 1975; 50:165-70.

48. Bergevin Y, Dougherty C, Kramer M. Do infant formula samples shorten the duration of breast-feeding? *Lancet* 1983; 1:1148-51.

49. Applebaum RM. The obstetrician's approach to the breasts and breast feeding. *J Reprod Med* 1975; 14:98-116.

50. De Carvalho M, Hall M, Harvey, D. Effects of water supplementation on physiological jaundice in breastfed babies. *Arch Dis Child* 1981; 36:568-9.

51. Nicoll A, Ginsberg R, Tripp JS. Supplemental feeding and jaundice in newborns. *Acta Paediatr Scand* 1982; 71:759-61.

52. Gray-Donald K, Kramer MS, Munday S, Leduc DG. Effect of formula supplementation in the hospital on the duration of breast-feeding: a controlled clinical trial. *Pediatrics* 1985; 75:514-8.

53. Ladas AK. How to help mothers breastfeed. *Clin Pediatr* 1970; 9:702-5.

54. Ellis DJ, Hewat RJ. Fathering characteristics of mates of breastfeeding women. Unpublished manuscript. Available from: Ms. Donelda Ellis, 2211 Westbrook Mall, Vancouver, BC. V6T 2B5.

55. Sjolín S, Hofvander Y, Hillervik C. A prospective study of individual courses of breastfeeding. *Acta Paediatr Scand* 1979; 68:521-9.

56. Canada's food guide: handbook. Ottawa: Health Promotion Directorate, Health and Welfare Canada, 1982.

57. Pipes P. When should semi-solid foods be fed to infants? *J Nutr Educ* 1977; 9:57-9.

58. Chapman JJ, Macey MJ, Keegan M, Borum P, Bennett S. Concerns of breastfeeding mothers from birth to 4 months. *Nurs Res* 1985; 34:374-7.

59. Breastfeeding: an awareness program from Health and Welfare Canada and the Canadian Paediatric Society. Ottawa: Health and Welfare Canada, 1979.

60. Hospital breast-feeding kit. Ottawa: Health and Welfare Canada, 1985.

## HISMANAL<sup>®</sup>

astemizole

### THERAPEUTIC CLASSIFICATION

Histamine H<sub>1</sub>-antagonist

**ACTION** Astemizole is a potent, long-acting and selective histamine H<sub>1</sub>-antagonist. It produces a dose-related inhibition of skin reactions to intradermal histamine. Astemizole inhibits the nose reaction to nasal challenge with histamine and allergens. It inhibits the bronchial reaction to inhaled histamine and allergens in asthmatic patients. Astemizole has extremely weak serotonin antagonism, no anticholinergic properties, no antagonism of dopamine or other catecholamines. Astemizole has no effect on the C.N.S. and does not interact with drugs acting on the C.N.S.

Astemizole is rapidly absorbed after oral administration. Peak plasma levels are obtained within one hour. Astemizole is extensively metabolized, and plasma levels of unchanged drug are low.

Astemizole is completely metabolized in the liver and mainly excreted through the faeces. Two metabolites of astemizole, desmethylastemizole and norastemizole have, orally, the same pharmacological properties as the parent compound.

**INDICATIONS** HISMANAL<sup>®</sup> astemizole is indicated for the treatment of seasonal allergic rhinitis, allergic conjunctivitis, chronic urticaria and other allergic conditions.

**CONTRAINDICATIONS** HISMANAL<sup>®</sup> astemizole is contraindicated in patients with a known hypersensitivity to the drug.

**PRECAUTIONS Use in Pregnancy** Due to insufficient data, HISMANAL<sup>®</sup> astemizole should be used in pregnant women only when, in the opinion of the physician, the potential benefits outweigh the possible hazards.

**Use with C.N.S. Depressants** HISMANAL<sup>®</sup> astemizole had no potentiating effects with alcohol or other C.N.S. depressants in clinical and laboratory studies.

**Drug Interaction** No drug interaction has been found between astemizole and bronchodilators, other systemic antihistamines, antibiotics, sulfonamides, corticosteroids, estrogens, progestogens, oral contraceptives, diuretics, antihypertensive agents, analgesics and anti-inflammatory agents, tranquilizers and antidepressants.

**ADVERSE REACTIONS** The incidence of adverse experiences during astemizole treatment was comparable to that during placebo control treatment.

During chronic treatment, body weight tended to increase. This is probably due to an increase in appetite.

Astemizole had no effect on laboratory parameters.

**SYMPTOMS AND TREATMENT OF OVERDOSAGE** In cases reported to date, involving oral ingestions of up to 300 mg of HISMANAL<sup>®</sup> astemizole, no untoward effects have been noted.

**DOSAGE AND ADMINISTRATION** Adults and children older than 12 years of age: 1 tablet (10 mg) once a day. Children between 6 and 12 years of age: ½ tablet (5 mg) once a day.

Children under 6 years of age: 2 mg (1 mL suspension) per 10 kg/day.

To achieve optimal absorption, astemizole should be taken on an empty stomach.

### AVAILABILITY

**Tablets** Each white, round scored compressed tablet contains 10 mg astemizole. Available in boxes containing 2 blister packs of 10 tablets each.

**Suspension** Each mL contains 2 mg astemizole. Available in bottles of 30 mL.

### REFERENCES

1. Sussman G. L.: *Today's Ther Trends* (in press) 1985.
2. Vanden Bussche G. et al.: A Review of Worldwide literature **HISMANAL SYMPOSIUM**, Beersse, Belgium 1983.
3. Holgate S. T.: **THORAX 39** NO. 9 668-672 1984.
4. Smith N. T.: **SATELLITE SYMPOSIUM**, Am Acad All & Immun, Chicago, 1984.
5. Seppälä T.: *Curr Ther Res* 31: 638-44, 1982.
6. Laduron P. M.: *Mol Pharmacol* 21: 294-300, 1982.
7. Knight A.: *Cdn J Otol* 1985.



**JANSSEN**  
PHARMACEUTICA

Mississauga, Ontario

® Trademark



JANSEN 1985